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more of the structure and development of these curious entomogenous fungi. About twelve years ago he brought out "a stately quarto volume of two hundred and forty-two beautifully printed pages and twenty-six plates crowded with six hundred and seventy-two elegantly drawn figures," which the present writer reviewed in the *American Naturalist* (1897, p. 513). In this volume, which bore the same title as the one now before us, 28 genera and 158 species were recognized. And now in the second volume these numbers are increased to "more than fifty genera," and "about five hundred species and varieties." And we are told that since the completion of the plates "considerably more than one hundred additional new species have already accumulated," of which it is the author's expectation to publish figures and descriptions "with as little delay as possible."

The present publication adds to our knowledge of the structure of these plants in an instructive introductory chapter. In a brief and cautious discussion of their relationship Dr. Thaxter says:

They are more surely Ascomycetes than many forms included in this group, and the writer sees no sufficient reason why they should not be placed in the Pyrenomycetes, as a group coordinate with Perisporiales, Hypocreales, etc.

In the systematic portion of the work the genera are arranged under two groups (orders?) viz., (I.) *Laboulbeniineae*, in which the antheridia are composed of "specially differentiated cells or groups of cells," and (II.) the *Ceratomycetinae*, in which the antheridia are composed of "more or less undifferentiated cells of the appendages or of their branches." In the first three are two families (?) viz., (1) *Peyritsiellaceae* (of 19 genera), with compound antheridia, and (2) *Laboulbeniaceae* (of 28 genera), with simple antheridia. The second order (?), which is composed of mostly aquatic plants, contains eight genera. The 44 plates are, if anything, better even than those in the previous volume, and enable one to get some idea of the structure of these very curious plants.

Dr. Thaxter asks his correspondents to communicate any additional material they may

have, and it may be well to repeat here the suggestions he made in his earlier contribution in regard to the collection and preparation of *Laboulbeniaceae* for study (pp. 248-249).

The collection of *Laboulbeniaceae* involves little more than the collection of a sufficient number of the proper hosts, although their presence on the letter is not always easy to ascertain in case of the smaller forms. In so far as concerns the collection of hosts my own experience . . . indicates that the most favorable localities in which to search for infested beetles is along the margins of small streams or of ponds. . . . Traps deposited in such situations, and made by raking together a heap of decaying grass, algae, etc., often yield large numbers of interesting specimens. Many forms may also be obtained by leaving bundles of hay or grass in cultivated ground for a few days and examining them over a sheet. Water beetles are in general best obtained by sweeping the margins of ponds or ditches with a dip-net. . . . Having obtained a number of hosts which are liable to be parasitized, it will be found that from about five to fifty per cent. will bear parasites. In order to obtain them for examination the host should be killed and impaled on a fine needle, care being taken that the surface of the insect remains perfectly clean and dry, and then examined over a dull white, and then over a black surface, with a hand lens magnifying about eight or ten diameters. . . . Every portion of the insect should be examined in different positions. . . .

Here is an opportunity for botanical collectors to exploit a new field near home, with the probability that new species or new hosts may be discovered. Any beetles on which these minute plants are found should be carefully packed, wet or dry, in clean cotton and sent to Dr. Thaxter, Cryptogamic Laboratory, Harvard University, Cambridge, Mass.

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*The Loose Leaf System of Laboratory Notes.*

By THEO. H. SCHEFFER, A.M. Philadelphia, P. Blakiston's Son & Company. 1908.

It fell to the lot of the present writer to review in *SCIENCE* of December 28, 1906, the first edition of this manual. The publishers have recently issued a "second edition, re-

vised." The revision comprises, as expressed by the author in its preface, "notes on three more types of animal life and is bound in a still more convenient form." Notwithstanding the closing statement of the author as to mode of binding, that of the former edition is continued without modification. On this point the reviewer had occasion to designate it as "the rather crude, *shoe-string* method." A more clumsy or inconvenient form of binding for such a manual could hardly be devised, and it is a pity the author's purpose of improvement might not have been realized.

Certain errors pointed out in the former review remain uncorrected in the present edition.

C. W. H.

*Ergebnisse und Fortschritte der Zoologie*—herausgegeben von Dr. J. W. SPENGLER, Professor der Zoologie in Giessen. Bd. I., Heft 1, 1907; Heft 2, 1908. Jena, Gustav Fischer.

The undertaking of Professor Spengel and a corps of collaborators to present the results and progress of zoological investigation in a series of annual volumes will meet the hearty approval of zoologists everywhere. The general plan is to issue a series of parts as they are ready, so as to make up a volume each year of between 600 and 700 pages. The parts before us at the present time contain the following contributions: (1) "Die Chromosomen als angenommene Vererbungsträger," by Dr. Valentin Häcker, 136 pages; (2) "Die verschiedenen Formen der Insectenmetamorphose, und ihre Bedeutung im Vergleich zur Metamorphose anderer Arthropoden," by Dr. Richard Heymons, 53 pages; (3) "Die Scyphomedusen," by Professor Otto Maas, 50 pages; (4) "Die Amphineuren," by Dr. H. F. Nierstrasz, 68 pages; (5) "Die gegenwärtige Stand der Kenntnisse von den Copulationsorganen der Wirbeltiere, insbesondere der Amnioten," by Dr. Ulric Gerhard, 96 pages.

If the parts are a good promise of those to follow, it is obvious that the proposed series will have an exceedingly wide scope, so that the specialist in any particular field will not find his subject represented very often. But the object is rather to enable the student to

obtain authoritative information of the state of investigation in lines other than his own, and this object will certainly be admirably accomplished by such reviews with their full lists of references. The writer would raise the question whether it would not be better to classify the separate contributions so as to give each volume an individual character? The *pros* and *cons* on this question are perhaps sufficiently obvious, and it is also obvious from the list of contributions to the first two parts that the editor will not take the responsibility of giving invidious precedence to any subject.

The publication has a field of its own which is not covered by the *Zoologische Anzeiger*, *Zoologisches Centralblatt*, the *Concilium Bibliographicum*, the *Jahresberichte*, or by Merkel und Bonnet's *Ergebnisse der Anatomie und Entwicklungsgeschichte*. The separate contributions to the first two parts are admirably concise, sufficiently complete and critically excellent. One must admire the enterprise of our German colleagues, who find time in the midst of unremitting investigation to sum up and present to the world these necessary records of progress, which contribute to the progress itself by the mere process of organization. So long as German scientists are willing to perform such necessary functions in so admirable a way, we of a newer country and culture are relieved of such duties and should be properly grateful. American science is no longer an undiscovered bourne in Germany; on the whole, the contributions of American zoologists to the subjects treated receive adequate recognition.

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#### SIR WILLIAM RAMSAY ON TRANSFORMATION OF THE ELEMENTS

IN the course of his presidential address before the Chemical Society, London, on March 25, Sir William Ramsay said, as reported in the *London Times*, that his subject was the hypothesis that the genuine difference between elements was due to their gain or loss of electrons. The question was whether, to take a concrete example, an atom of sodium by